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Case report

Focal vitreomacular traction: Resolution after ocular massage

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ABSTRACT

Purpose: Vitreomacular traction (VMT) is a relatively common ocular disorder that may distort the foveal structure causing visual symptoms. The influence of ocular massage (OM) on this condition has not been considered yet. We aim to report clinical and OCT features of VMT release associated with OM.

Observations: A 70-year-old woman complained about blurred vision and metamorphopsia in her right eye for one month. Her best-corrected visual acuity (BCVA) was 20/50. Macular OCT showed focal VMT in this eye. Moderate intensity, digital OM was performed by an ophthalmologist. However, the traction was still present. The patient was instructed to perform the same OM every 8 hours at home herself. Four days later she indicated disappearance of metamorphopsia, her BCVA increased to 20/25 and OCT showed VMT release with 39-μm foveal thinning.

Conclusions and importance: OM may be useful for focal VMT release.

1. Introduction

Vitreomacular traction (VMT) is caused by partial posterior vitreous detachment associated with persistent vitreous attachment to the macula. The traction may distort the foveal structure inducing decreased visual acuity and metamorphopsia. The diagnosis of this entity is confirmed by means of optical coherence tomography. The treatment options for VMT include observation, pars plana vitrectomy (PPV) and intravitreal injections (IVIs) of expansive gas (pneumatic vitreolysis) or ocriplasmin (enzymatic vitreolysis).[1]

However, as far as we know, ocular massage (OM) has not been considered so far as an adjunctive treatment to achieve VMT release (VMTR). In this case we describe the resolution of VMT in relation to OM.

2. Case report

A 70-year-old woman complained about blurred vision and metamorphopsia in her right eye for one month. Her best-corrected visual acuity (BCVA) was 20/50. Macular OCT showed focal VMT with tiny intraretinal cysts (Fig. 1A). The horizontal diameter of VMT was 114 μm. The other ophthalmic examinations were normal, including careful funduscopy of the peripheral retina. Moderate-intensity, digital OM on the affected eye was applied by the ophthalmologist (JJGM) for 1 minute in order to try to release this small adhesion. OM was performed placing the two index fingertips on the nasal and temporal side of the eyeball, with the eyelid of the patient shut, and pressing alternatively with both fingers. Then OCT was repeated but traction was still present. The patient was instructed to perform the same OM (1 minute, moderate intensity massage) every 8 hours at home herself.

Four days later she indicated disappearance of metamorphopsia, her BCVA increased to 20/25, OCT showed VMTR with tiny intraretinal cysts decrease (Figure 1B) and 39-μm foveal thinning (Fig. 1C). The patient assured that she had accomplished OM as instructed.

3. Discussion

In this case, OM was performed with the aim of solving the disorder. OM induces an intermittent vitreous movement and probably a mechanical tension/distension cycle over the VMT. Besides, a diminution in the volume of the vitreous with a reduction of intraocular pressure (IOP) due to vitreous water loss (dehydration) is observed after OM.[2] Vitreous rehydration and subsequent IOP recovery occurs after some minutes.[3] All these changes may had helped to achieve VMTR in this

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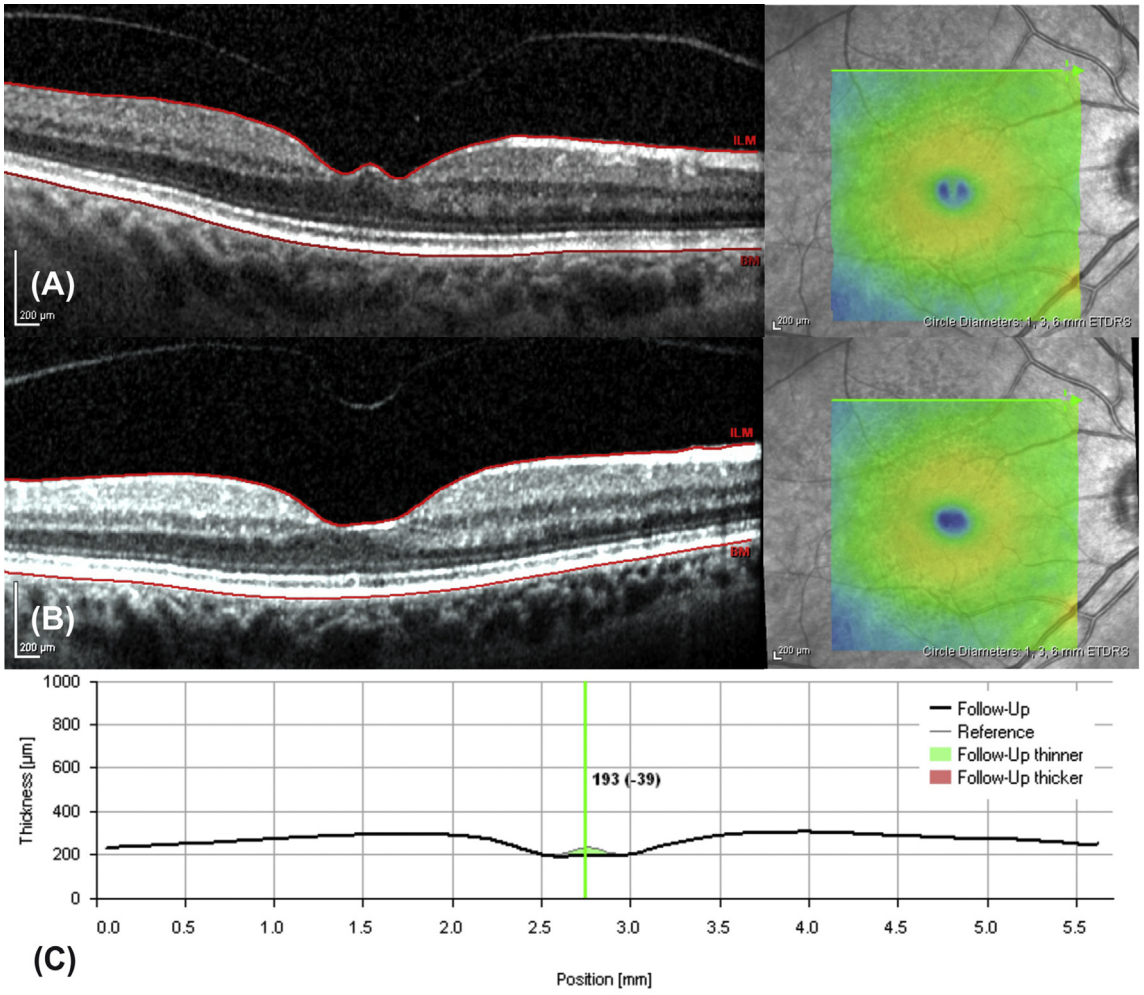

Fig. 1. Progression of the vitreomacular traction. (A) OCT showing focal vitreomacular traction and (B) release of the traction after 4 days of self-applied digital ocular massage. (C) 39-µm foveal thinning after vitreomacular traction release.

patient.

It is very unlikely that VMTR had occurred spontaneously because this possibility has been described to happen many months (but not few days) after the diagnosis and in a moderately low percentage of eyes, according to the results of recent studies concerning the natural course of VMT.[4–7] John et al. found that only 30.23% of VMTs (13 out of 43 eyes) without intraretinal cysts or clefts and 30.35% (17 out of 56 eyes) with intraretinal cysts or clefts released spontaneously after a median follow-up period of 18 months.[4] Additionally, Theodossiadis et al.[5] demonstrated that 28.5% of VMTs (12 out of 46 eyes) proceeded to spontaneous resolution during a mean follow-up of 8.75 ± 6.06 months. They also found that when the horizontal diameter of VMT is narrow (< 400 µm), a greater force is exerted upon the fovea, which facilitates the VMTR. Focal VMT has also been associated to a better final visual acuity after PPV.[8] In our case the diameter of VMT was very narrow (114 µm).

In another study Dimopoulos et al.[6] noted that 43% of eyes affected with VMT (20 out of 46 eyes) presented a spontaneous VMTR during a median follow-up period of 594 days (longer than 19 months), most of them after 6–12 months of observation, being the median duration from baseline examination to the VMTR of 375 days. Plus, Errera[7] et al. recently observed that only 20% of 183 eyes with VMT resolved spontaneously in a 17.4-month follow-up period (occurring on average at 15 months with a range between 1 and 48 months).

Thus, in the present clinical case VMTR, that occurred 4 days later, seemed rather to be related to mechanical effects of external OM.

Otherwise, it is known that internal vitreous manipulation effected through IVIs can induce VMTR. IVIs produces hyperhydration of the vitreous and transient IOP elevation.[9] These changes seem to promote VMTR. In fact, Stalmans et al.[10] showed that IVIs of 0.1 ml of saline resulted in VMTR in 10.1% of eyes compared with 26.5% of VMTR in eyes treated with IVIs of ocriplasmin at day 28. Although a biological effect is attributed to ocriplasmin the authors admitted some treatment response to placebo injections. Recently, a study by Scholz et al.[11] showed macular structural changes and subretinal fluid in the eyes treated with ocriplasmin, not seen in eyes that had PPV. Visual improvement and VMTR rate (50% with ocriplasmin versus 100% with PPV) were better with vitrectomy.

Plus, previous IVIs of anti-VEGF has been associated with a higher incidence of VMTR. Almeida et al.[12] showed that 52% of eyes with VMTR received IVIs of anti-VEGF during the observation period (mean of 9.1 ± 8.9 injections during 13.7 ± 11.4 months) versus only 13% of eyes in the group of persistent VMT (mean of 2.8 ± 1.8 IVIs during 10.0 ± 6.6 months). More recently, Yu et al.[13] showed in a meta-analysis that IVIs of expansile gas induced a higher rate of VMTR (87.5%) in comparison with IVIs of ocriplasmin (42.9%) at day 28. The authors attributed the VMTR associated with IVIs of expansile gas to the internal massaging action of the bubble over VMT. Similar results using expansile gas were found by Chan et al.[14] (86% of VMTR after a single IVI) at a median of 3 weeks. All these evidences lead to think that internal manipulation of the vitreous may help to release VMT.

It would have been interesting in this case to determine whether OM

increases vector forces that might have contributed to the release of the vitreomacular adhesion. An early attempt to study VMT optically was done by Schepens, Trempe and Takahashi, using a noncontact lens (never commercialized), which predated the 90-diopter and similar lenses we have today.[15] A possible approach to study these vector forces in our patient could have been using a hand-held 90-diopter lens and oblique slit-lamp illumination, or perhaps with dynamic B-scan ultrasound or OCT. The eye could have remained stationary during OCT, while digital pressure could have been intermittently applied.

Several cautions must be considered before OM is initiated. It is reasonable to avoid this technique in pseudophakic eyes with posterior capsular disruption or eyes with peripheral retinal tears or degenerations, for example. All these were ruled out in our case. Although it seems to be rare, other potential harmful effects of OM (or eye rubbing) have been exceptionally reported such as hypotony maculopathy,[16] subretinal hemorrhage,[17] retinal tear/detachment[18] or lens dislocation.[19] Complications might also be more likely when the ocular massage is performed by the patient, rather than in a clinical setting. Therefore, a careful explanation of the technique should be provided to the patient before starting ocular self-massaging.

In conclusion, although our experience is limited because this is the first and only time we have treated a focal VMT in this way, we consider that this safe and inexpensive technique may help to achieve VMTR. Further controlled studies are needed in this sense.

Patient consent

The patient consented the publication of the case. This report does not contain any personal information that could lead to the identification of the patient.

Conflicts of interest

All authors have no financial disclosures.

Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

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References

1. Flynn Jr HW, Relhan N. The charles Schepens lecture: management options for vitreomacular traction: use an individualized approach. *Ophthalmol Retina.* 2017;1:3–7.
2. Francois J, Gdal-On M, Takeuchi T, Victoria-Troncoso V. Ocular hypotension and massage of the eyeball. *Ann Ophthalmol.* 1973;5:645–647.
3. Obstbaum SA, Robbins R, Best M, Galin MA. Recovery of intraocular pressure and vitreous weight after ocular compression. *Am J Ophthalmol.* 1971;71:1059–1065.
4. John VJ, Flynn Jr HW, Smiddy WE, et al. Clinical course of vitreomacular adhesion managed by initial observation. *Retina.* 2014;34:442–446.
5. Theodossiadis GP, Grigoropoulos VG, Theodoropoulou S, Datseris I, Theodossiadis PG. Spontaneous resolution of vitreomacular traction demonstrated by spectral-domain optical coherence tomography. *Am J Ophthalmol.* 2014;157:842–851.
6. Dimopoulos S, Bartz-Schmidt KU, Gelisken F, Januschowski K, Ziemssen F. Rate and timing of spontaneous resolution in a vitreomacular traction group: should the role of watchful waiting be re-evaluated as an alternative to ocriplasmin therapy? *Br J Ophthalmol.* 2015;99:350–353.
7. Errera MH, Liyanage SE, Petrou P, et al. A study of the natural history of vitreomacular traction syndrome by OCT. *Ophthalmology.* 2018;125:701–707.
8. Yang CS, Hsieh MH, Chang YF, Wang CY, Chen SJ. Predictive factors of visual outcome for vitreomacular traction syndrome after vitrectomy. *Retina.* 2018;38:1533–1540.
9. Abedi G, Adelman RA, Salim S. Incidence and management of elevated intraocular pressure with antivascular endothelial growth factor agents. *Semin Ophthalmol.* 2013;28:126–130.
10. Stalmans P, Benz MS, Gandorfer A, et al. Enzymatic vitreolysis with ocriplasmin for vitreomacular traction and macular holes. *N Engl J Med.* 2012;367:606–615.
11. Scholz P, Sitnilska V, Hess J, Becker M, Michels S, Fauser S. Comparison of resolution of vitreomacular traction after ocriplasmin treatment or virectomy. *Retina.* 2019;39:180–185.
12. Almeida DR, Chin EK, Rahim K, Folk JC, Russell SR. Factors associated with spontaneous release of vitreomacular traction. *Retina.* 2015;35:492–497.
13. Yu G, Duguay J, Marra KV, et al. Efficacy and safety of treatment options for vitreomacular traction: a case series and meta-analysis. *Retina.* 2016;36:1260–1270.
14. Chan CK, Crosson JN, Mein CE, Daher N. Pneumatic vitreolysis for relief of vitreomacular traction. *Retina.* 2017;37:1820–1831.
15. Schepens CL, Trempe CL, Takahashi M. *Atlas of Vitreous Biomicroscopy.* Boston: Butterworth-Heinemann; 1999:123–126.
16. Nguyen VT, Hwang TN, Alvarado JA, McCulley TJ. Hypotony maculopathy after eyelid massage for overcorrected blepharoptosis. *Ophthalmic Plast Reconstr Surg.* 2009;25:139–140.
17. Ruderman JM, Jampol LM, Krueger DM. Visual loss caused by subretinal hemorrhage and rupture of Bruch's membrane after digital ocular massage. *Am J Ophthalmol.* 1988;106:493–494.
18. Kusaka S, Ohashi Y. Retinal detachments with crescent-shaped retinal breaks in patients with atopic dermatitis. *Retina.* 1996;16:312–316.
19. Bassily R, Lencova A, Rajan MS. Bilateral rupture of the posterior capsule and intraocular lens dislocation from excessive eye rubbing. *J Cataract Refract Surg.* 2016;42:329–331.